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people and Indians of Mexico. I am convinced that this article seen in the museum of Nassau, N. P., was used to bruise or grind the corn, seeds of plants, dried fish, etc., used as food by the ancient and now entirely extinct race. The female sitting upon the ground, takes the mill, places it between her legs ; then taking a flat piece of very hard wood (or stone) which can be found upon beaches, she draws it backward and forward, bringing under it whatever is in the mill, which, by rubbing back and forth, is soon reduced to flour, or to any consistency the animal or vegetable substance was desired.—EDWARD PALMER.

MICROSCOPY.

POSTAL MICRO-CABINET CLUB.—A club for the circulation and critical study of microscopic objects has been formed, its design and methods conforming mainly to those of the very successful English club. The following rules have been prepared for the use of the organization, and Rev. A. B. Hervey, No. 10 North Second St., Troy, N. Y., has consented to act as secretary until the first regular election of officers. Applications for membership may be made to him or to the Editors of the NATURALIST.

Rules of the American Postal Micro-cabinet Club.

1. This club shall be called the American Postal Micro-cabinet club.

2. Its object shall be the circulation, study, and discussion of microscopic objects.

3. Reliable persons accustomed to work with the microscope, and able to contribute to the usefulness of the club by sending good objects for examination, shall be eligible to membership.

4. Applications for membership may be made to the secretary, and should be accompanied by reference to some person, preferably a member of the club or a well known microscopist, who is acquainted with the applicant.

5. Names of applicants known to be eligible, shall be submitted to vote by the secretary, who shall send them around through the circuits in the letter packages. A four-fifths vote of all the members shall be necessary to election.

6. Members elect shall be notified of their election as soon as they can be placed in any circuit, either by the formation of new

circuits or by filling vacancies in old ones. They shall then, and during the first week of every January thereafter during their continuance in the club, send to the secretary, as annual dues, the sum of fifty cents. If this subscription should prove insufficient to defray the expenses of the club, the secretary, with the approval of the President and managers, may give notice of an increase to any required sum not exceeding one dollar per year.

7. The officers shall be a President, Secretary, who shall also act as Treasurer, and two managers. They shall be elected by ballot by a plurality of votes cast, blanks for that purpose being sent around by the secretary in January of each year.

8. The secretary shall arrange the members in sections of twelve members each.

9. He shall send a box capable of holding one dozen slides to the first member of each section. Each person shall, within four days of the date of receiving it, put in a slide, preferably one which illustrates some new result of study or method of preparation, and mail the package, carefully directed and stamped, to the name and address next below his own on the list of members of the section. After completing each circuit the box shall be returned to the secretary who shall start it on the next circuit. When it has completed the whole circle of all the circuits, it shall be returned to the first circuit again, when each member shall remove his own slide and replace it with another, mailing the box as before to the next member.

10. Slides placed in the box must contain no writing. Written labels should be soaked off or pasted over, and the slide designated by a number to correspond with the number of the owner in the list of members of the section.

The slides are to be very carefully packed in the box, to which is securely attached by a string, at a distance of two inches, a tag bearing a postage stamp and the address of the next member of the section. Nothing is to be placed around or upon the box which could invite a blow from the post office stamp.

11. If any member should receive a box too much damaged to be safely used, or containing broken or damaged slides, or not containing the full number of slides indicated by the accompanying memoranda, he shall at once notify the secretary and the member who last mailed the box.

If the loss cannot be adjusted by exchange between the owner of the slide and the person who mailed it, the damaged slide shall be sent to the secretary who shall compensate the owner, to an extent not exceeding one dollar for any one slide, out of any unappropriated funds belonging to the club. Cash on hand and in excess of the estimated expenses of the current year shall alone be considered subject to this claim. Differences of opinion in regard to damages shall be referred to the President, whose decision shall be final.

12. At the same time with the box, and to the same address, shall be invariably mailed a letter-package containing a list of members of the section and of objects in the box, and blank papers for memoranda, remarks, questions and answers, notices of exchanges sought or offered, etc.; also, at the proper times, voting lists for election of officers or the transaction of other business. Everything contained in the letter-package shall be considered the property of the club, shall only be removed therefrom by the secretary and shall be by him filed or published as may seem most advisable.

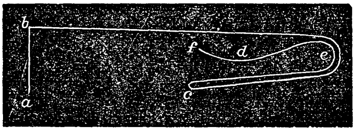
13. The letter-package and the box of slides should accompany each other, and any member who does not receive either one within three days after the receipt of the other, shall promptly notify the secretary.

Notice shall always be sent by members to the secretary, one week previously, if practicable, of any change of post-office address, or of any absence from home which would cause more than ten days' delay in the forwarding of any package directed to them.

14. The secretary shall annually submit a detailed statement of receipts and expenditures to the managers, who shall audit the same on behalf of the club.

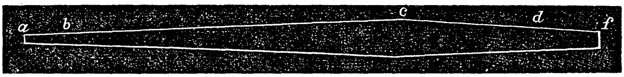
A NEW SPRING CLAMP FOR MOUNTING OBJECTS.—Mr. Norman N. Mason, of Providence, R. I., has contrived a clamp, or spring clip, for holding the cover-glass in position, which is probably by far the best yet made, both from the ease with which it can be made and the facility with which it can be used. A thin plate of sheet brass or German silver is cut to the shape of fig. 113, and then bent into position as represented in side view by fig. 114. The end of the glass slide is slipped under the spring *d*, and rests against the curve *e*. The point *a*, which may be protected with a cork if preferred, rests upon the centre of the cover-glass. A little change in the curve of one or both of the plates at *e*, will give any necessary change of pressure upon the slide or the cover. An easy way to form this clamp is to cut strips of the metal as long as from *a* to *f*, and as wide as at *c*. One is then bent upon itself at *c*, and hammered down flat; it is then filed, in a vice, with a uniform taper to *a;* the spring *d* is then bent up and the curve *e*, formed with a pair of wire-nippers, and finally the long, straight spring turned up at right angles at *b*. Fig. 113 is drawn to natural size; fig. 114 is two-thirds natural size.

Fig. 113.



Natural size.

Fig. 114.



Two-thirds natural size.

PRESERVING ALGÆ.—Mr. Thomas Palmer contributes to "Science Gossip" his method of preserving algæ as microscopic specimens. The seaweed is first washed in fresh water, which is left running so as to be continually changed, until the salt is entirely removed. It is then partially dried with blotting paper, and preserved in pure alcohol until wanted for mounting. For mounting it is transferred through chloroform to balsam. This method sacrifices the color, a loss which is overcome by staining with a warm solution of logwood.

MOUNTING SELECTED DIATOMS.—F. Kitton highly compliments slides received from Herr Weissflog, in which the selected diatoms ("not arranged in patterns, the doing which is a shameful waste of time") are mounted on a thin cover and then inverted over a cell consisting of a thin silver disk, of the same size as the cover, and perforated with a small central opening, often as small as $\frac{1}{50}$ inch. The object in this tiny cell is easily found, stray light is largely cut off, and a very neat mount is produced.

A TINTED CONDENSING LENS.— Prof. E. Abbe, of Jena, whose New Illuminating Apparatus seems not very unlike the common English "Webster Condenser" modified so as to be available in the limited space allowed between the stage and mirror in continental microscopes, suggests the employment as a condensing lens, when lamplight is to be employed, of a large glass globe filled with water colored of a moderate blue tint. This is placed between the flame and the plane mirror below the condenser, and gives, according to the depth of color employed, a nearly white or a decidedly blue illumination.

WIDE ANGLED OBJECTIVES.— Having been a member of the committee of the Memphis Microscopical Society appointed to make certain tests of various object-glasses, it may prove of interest to make public the results of our investigations.

Dr. Carpenter lays down as a fixed law the statement that "all who have made much use of the microscope are now agreed as to the superior value of objectives of moderate or even comparatively small angle of aperture for ordinary working purposes ; the special utility of the very wide apertures being limited to particular classes of objects." (Carpenter, 4th ed., p. 172).

It is now claimed that this no longer holds good ; and our investigations were undertaken simply with a view to testing the correctness of this statement.

The glass we selected as the representative of the wide angles was a "four-system" immersion $\frac{1}{10}$th, of nearly 180°; the narrow angles with which it was compared were the best at our command, by leading makers of England, Germany, France and America, and comprised both dry and wet systems. Bearing in mind the theory that the wide angles are only superior on diatoms and with oblique illumination, we discarded diatom tests, and used only central light.

The first slide selected was a specimen of mosquito scales, dry. Under the $\frac{1}{10}$th of nearly 180°, this object was beautifully defined, the structure of the intercostal spaces, longitudinal ribs and terminal spines being all sharply and clearly shown. Even under so high eye-piercing as $\frac{1}{4}$th inch solid (equal to D), the object was splendidly illustrated. The narrow and moderate angles were then successively brought to bear on the same object, with the uniform result that while not giving so good definition under low power eye-pieces, under the high eye-piece all utterly broke down. The next test selected was a slide of voluntary muscular fibre, in balsam. Here again the nearly 180° glass gave splendid results, the definition of the striæ being perfect even under D eye-piece. The moderate angles were again brought on the field, with the same result as before.

These facts seem to justify the claim that the law, as laid down, touching the general usefulness of the wide-angled glasses, is not now correct, having obtained credence at a period when the difficulties attending their construction had not been thoroughly mastered; but that such is no longer the case. I feel sure that the advanced workers of this country already accept as true the conclusions arrived at by our committee; but I am also sure that by far the greater number of our microscopists still hold to the old faith.—ALBERT F. DOD, *Memphis*, *Feb.*, 1875.

FREEZING APPLIED TO HISTOLOGY.—Messrs. Key and Retzius, while admitting the value of freezing as a means of hardening certain tissues for cutting sections, have lately called attention to the false canals which are often formed and which not only disorganize the tissue, but might be mistaken for normal structures. At the moment of freezing, the water separates from the tissues and branches out into acicular columns of ice; and the cavities thus formed may be preserved and demonstrated by hardening the frozen sections by alcohol or osmic acid, before thawing them. Exactly similar appearances may be observed in sections of frozen blood or starchy or gelatinous mixtures.

Mr. Lawson Tait, of Birmingham, has found sections of tissue, which were cut while hardened by freezing, to be full of air-bubbles which even the air-pump failed to remove. The contained water had, in freezing, expelled the air it had held in solution, and the bubbles thus produced were so entangled in the tissue as to defy mechanical treatment. They were readily re-dissolved, however, by soaking the section in cold distilled water which had been recently boiled to expel its supply of air.

EMBEDDING IN ELDER PITH.—Dr. C. H. Golding Bird, in a paper read before the Medical Microscopical Society, advocates elder pith as an almost universally preferable medium for embedding tissues preparatory to cutting sections. For holding in the hand it will in most cases give as good results, as the troublesome wax method, and in far less time; while for use in the microtome it is preferable because of its simplicity and portability, no accessory appliances being required, because it cannot revolve in the microtome like wax, and because of the facility with which it can be removed from the tube and readjusted in it if required. The object, such as a piece of hardened tissue, is loosely packed in the tube of the microtome by means of dry elder pith which, being wetted, in about three minutes swells so as to fill up the vacant spaces and fixes the object immovably in place. This process which is represented as equal, in most cases, to the common method by wax or paraffine, is invaluable for cutting sections of leaves and the like, for which the usual embedding media are nearly useless. Even tissues embedded in wax may be conveniently packed in the microtome by means of pith.

NOTES.

An organization bearing the title of the "Central Ohio Scientific Association" was formed in Urbana, Champaign Co., O., in November last, with the following officers for the present year: President, Rev. Theo. N. Glover; Vice-President, P. R. Bennett, Jr.; Corresponding Secretary and Curator, Thos. F. Moses, M. D.; Recording Secretary, Wm. F. Leahy; Treasurer, J. F. Meyer.

The 22d of November, the block of granite which is designed to cover the tomb of the naturalist Agassiz, left Interlaken for Neuchâtel. It has been taken from the rocks situated below the glaciers of the Aar, near the hut where Agassiz and his colleagues in science explored the glaciers.—*Swiss paper.*

The Detroit "Scientific Association" has during the past winter held monthly meetings. The museum of the society is temporarily located in rooms. The officers for 1874–5 are G. P. Andrews, M.D., President; and A. B. Lyons, M.D., Secretary and Cabinet keeper. There are eight Curators.

The Geological Magazine edited by Henry Woodman, has just completed the first volume of the second decade since its first publication. This journal is of sufficient general and popular interest to secure subscribers in this country among geologists. The publishers are Messrs. Trübner & Co., of London. Subscriptions will also be taken at the Naturalists' Agency.